

U.S. Patent Application Serial No. 09/663,709  
Response filed December 1, 2004  
Reply to OA dated September 7, 2004

### **REMARKS**

Claims 1, 3 and 7 are pending in this application. Claim 1 has been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicant regards as his invention. The applicant respectfully submits that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **September 7, 2004**.

Support for the recited lower limit of 0.1 % in amended claim 1 may be found in the specification on page 6, line 18.

#### **General comments regarding the amendment**

JP-A-5-244979, described in "Background of the Invention" of the instant specification, is the priority application of Yoshikawa cited in the first Office Action of November 20, 2001. The ACE inhibitor described in this document is obtained by merely digesting dried bonito with thermolysin, without reducing the content of polypeptides after digesting. Therefore, as demonstrated by the Declaration of February 22, 2002, the content of polypeptides having molecular weight of least 5000 is 21 to 30%. However, the instant specification describes regarding Yoshikawa that "the above compositions are still open to improvements in an aftertaste though **peptide-specific bitterness is reduced**" (page 2, lines 24 to 26 of the present specification, emphasis added). Therefore, in this way, even when a large amount of polypeptide is included, the composition is not bitter to an extent that it cannot be eaten ("bitterness" is not absolute and the composition is evaluated as "bitter" compared to the present invention). However, in such a case, "aftertaste" and

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"hue" are inferior and a composition that is excellent in all of "bitterness", "aftertaste", "hue" and "activity" is not obtained.

The present invention solves this problem by reducing the amount of polypeptides contained therein to 0.1 to 10 % by weight. By reducing the amount of polypeptides to 0.1 to 10 % by weight, bitterness is kept low and excellent aftertaste, hue and activity are obtained.

**Claims 1, 3 and 7 remain rejected under 35 U.S.C. §102(b) as being anticipated by Yokoyama et al. for the reasons set forth in the previous Office action and the reasons set forth below. (Office action paragraph 1)**

The rejection is overcome by the amendment to claim 1, limiting the reduced "content of polypeptides having a molecular weight of at least 5000 to **0.1 to 10 %** by weight of the total hydrolyzate in the mixture".

The supernatant A described in Yokoyama is evaluated as "not bitter". However, as demonstrated by the Declaration of December 22, 2003, the content of polypeptides having molecular weight of at least 5000 is 21 % and therefore, in the same manner as in Yoshikawa, when compared to the present invention, "it is not suitable..., because there are defects that hue will become yellow or brown, bitterness slightly remains to give unnatural flavor, and that aftertaste remains for a long time if the peptide is added to weak-flavored things, and further because inhibitory activity will not be improved" (page 6, line 19 to 24 of the instant application). Also, from the description "**on the other hand**, the pepsin digest was bitter", it can be seen that the supernatant

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A of Yokoyama was found to be "not bitter" in comparison to the evaluation of pepsin. Furthermore, Yokoyama neither describes nor suggests that an ACE inhibitor that is excellent in all of bitterness, aftertaste, hue and activity can be obtained by reducing the amount of polypeptides to 0.1 to 10 % by weight.

In Yokoyama, purified ACE-inhibitory peptides are obtained from supernatant A, that are evaluated as not being bitter, and the Examiner seems to think that this purified peptide contains at most 10 % by weight of polypeptides and is not bitter. However, in Yokoyama, it is "supernatant A" that is evaluated as "not bitter" and not the peptide purified from supernatant A. Furthermore, the purified peptide does not have any impurities, including other peptides, and clearly differs from the present invention, which contains 0.1 to 10 % by weight of polypeptides, in this respect.

Taste is exhibited from a close connection between the components contained in a substance. In the food of the present invention, various peptides and polypeptides, which may be bitter or not bitter, are contained and the degree of bitterness thereof varies. Usually, foods that contain various components are bitter or not bitter depending on the amount of the components. That is, in supernatant A of Yokoyama, which is evaluated as not being bitter (compared to pepsin digest) as a whole (however, more bitter than the present invention and inferior in aftertaste, hue and activity), various peptides and polypeptides are contained. These are connected in a close and complex manner and as a result, supernatant A is evaluated as being "not bitter". This does not mean that all of the components contained therein are not bitter. In general, a **peptide having ACE inhibitory-activity**

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**is also known to have bitter taste** and therefore, it is clear that purified peptide will have bitterness when purified from supernatant A, which is evaluated as not being bitter.

If the purified peptide is excellent in all of bitterness, aftertaste, hue and activity, one skilled in the art would try to obtain purified peptide instead of a complex mixture, in which the content of polypeptides is determined. However, as described above, there is the problem that all of the properties are not necessarily excellent in the case of purified ACE-inhibitory peptides. That is, there is the problem that an ACE inhibitor that is excellent in all of bitterness, aftertaste, hue and activity is not obtained, regardless of whether purification is sufficient (purified peptide) or insufficient (supernatant A). On the other hand, the present invention has solved this problem by finding that an ACE inhibitor having extremely good balance in all of bitterness, aftertaste, hue and activity can be obtained by containing not only purified peptide but also "0.1 to 10 % by weight" of polypeptides having molecular weight of at least 5000.

**Claims 1, 3 and 7 remain rejected under 35 U.S.C. §102(b) as being anticipated by Yasumoto (JP 06298794).** (Office action paragraph 2)

The rejection is overcome by the amendment to claim 1.

A food that is not bitter is obtained in Yasumoto. However, in Yasumoto, only the "bitter peptide", which is the substance that causes bitterness, is adsorbed and removed in order to control bitterness. That is, Yasumoto focuses only on bitterness and neither describes nor suggests that bitterness can be suppressed further, and aftertaste, hue and activity become excellent by adjusting

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the polypeptide content to "0.1 to 10% by weight," as recited in amended claim 1.

In view of the aforementioned amendments and accompanying remarks, claims 1, 3 and 7, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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